

T1000™ Fine Overlay

Technical Data Sheet T1000 FINE 03

625 W Illinois Ave, Aurora, IL 60506
 1-800-282-3388 Fax: 630-906-1982
www.butterfieldcolor.com

FOR PROFESSIONAL USE ONLY. Read all applicable and current product information for your project: Technical Data Sheet (TDS), Color Chart, Installation Guide, Material Safety Data Sheet (MSDS).

MasterFormat™ Guide Specifications, and Butterfield Color Architectural Details and Specifications are available for the specifier/designer. All information is available for download online at www.butterfieldcolor.com

1. Description: T1000™ Fine Overlay is a polymer modified cementitious topping formulated for resurfacing structurally sound, non-moving concrete floors, walls, and exterior hardscapes. The cured product creates an abrasion resistant surface suitable for pedestrian and automobile traffic. It is an ideal system for restoring worn or color blemished concrete, or correcting construction errors. Properly applied to clean and sound concrete, T1000™ Fine Overlay is freeze/thaw resistant. 21-day compressive strength is 5860 psi (40.4 Mpa).

T1000™ Fine Overlay is a precise blend of graded sand, cement, and polymer, which allow for thin applications. It is a pre-packaged material that is mixed on the jobsite with clean water. It can be smooth troweled, broom finished, or applied using a splatter brush or hopper gun for a knock down finish with Butterfield Color® Stencils. The material can be finished for enhanced slip resistance. Application thickness ranges from 1/16 inch (1.5mm) to a maximum of 3/16 inch (4.5 mm). For thicker installations, up to 1/2 inch (13 mm) in a single application, consider using T1000™ Stampable Overlay.

T1000™ Fine Overlay is packaged in medium gray or white colors. Those base colors may be colored with a Uni-Mix® Color Pack. 24 colors are available. Refer to the Uni-Mix® Integral Colorant color chart for available colors. Custom colors and colors selected from the Perma-Cast® Shake-on Color Hardener color chart can be formulated with ample lead-time, without up charges or minimums. Note: When T1000™ Fine Overlay is mixed with a Uni-Mix® Color Pack, the cured color will not be an exact match to concrete colored with integral color or color hardener. T1000™ Fine Overlay medium gray, white or colored materials may be chemically stained by applying Perma-Cast® Sierra Stain™. Read the Perma-Cast® Sierra Stain™ Technical Data Sheet before installing product.

2. Limitations: T1000™ Fine Overlay is formulated for use over thoroughly clean, structurally sound, and non-moving concrete. Surface preparation is required. New concrete must be fully cured before applying the product. Maximum applied thickness is 3/16" (4.5mm) in a single application. Do not install product if ambient and substrate temperatures are not between 45° F (7° C) and 85° F (30° C),

unless site conditions can be modified to correct for temperature extremes.

T1000™ Fine Overlay should not be installed in areas subject to steel wheel traffic, strong chemicals, periodic water immersion, or hydrostatic pressure. The cured overlay surface should be sealed for ease of cleaning, particularly on interior floors. Extend existing substrate control joints up through the overlay to minimize random cracks in the overlay. Random cracks in the substrate, if not properly repaired, may transfer through the cured overlay.

3. Cautions: Harmful if inhaled. This product contains silica (crystalline quartz) and Portland cement. Do not breathe dust. Prolonged exposure can result in Silicosis. Use with adequate ventilation. Portland cement may cause alkali burns. Irritating to eyes and skin. Wear a respirator, safety goggles, gloves, and other protective clothing during installation. Immediately after use, wash any area of exposed skin. If contact is made with the eyes, flush thoroughly with water, do not rub. Do not take internally. Keep out of reach of children and animals. Dispose of all residual materials according to local, state, and federal regulations. Slip resistant finishes, slip resistant additives must be utilized in order to minimize dry or wet slip. Read the T1000™ Fine Overlay Material Safety Data Sheet (MSDS) before installing the product.

4. Packaging: T1000™ Fine Overlay is available in 55-pound (25 kg) bags. Uni-Mix® Color Pack weights vary from 0.5 – 1.25 pounds (0.23 – 0.57 kg), depending on the color selected.

4.1 SHELF LIFE: 2 years in original, unopened containers, in dry storage.

5. Coverage: The coverage rates of one 55-pound (25 kg) unit of T1000™ Fine Overlay are approximately:

96 SF at 1/16" thick (9 m² at 1.5 mm thick)
 48 SF at 1/8" thick (4.5 m² at 3 mm thick)
 32 SF at 3/16" thick (3 m² at 5 mm thick)

Coverage will vary depending on the depth of installation, substrate texture, and method of application and finishing.

6. Substrate Preparation: Remove all potential bond breakers such as grease, oil, paints, sealants, drywall taping compound, mastics and other contaminants on the

surface. New concrete must be fully cured and free from curing and sealing compounds, laitance, or dusting. Slick, hard-troweled floors must be opened and roughened. Random cracks must be repaired.

Surface preparation may include high-pressure washing, grinding, scarifying, shot blasting, or sandblasting, depending on the type of residue being removed and surface profile required. Refer to the International Concrete Repair Institute Guideline #03732 for information on achieving a Concrete Surface Profile (CSP) of #3 - #5. Failure to remove all contamination that impedes the adhesion of T1000™ Fine Overlay will cause the topping to delaminate. Detergents or soaps should not be used since they may leave a surface residue. Do not acid etch as it may weaken the surface. Unsound concrete must be removed down to sound concrete.

7. Priming: Use of a primer with T1000™ Fine Overlay is optional. However, for added durability, apply an even coat of T1000™ Concrete Primer to a clean and sound substrate using a paint roller or bristle brush. Coverage is approximately 200 square feet per gallon (4.9 m²/L). Take care to protect adjacent surfaces from overspray or splash. Once the application of T1000™ Concrete Primer has dried tack free, installation may proceed. T1000™ Fine Overlay may be applied up to 24 hours after application of primer. Protect primed surface from moisture and contamination. After 24 hours, if the primed surface is exposed to moisture or becomes dirty, the primer must be reapplied. Read the T1000™ Concrete Primer Technical Data Sheet before installing product.

8. Mixing: Prior to mixing, store all materials in a shaded or cool environment. Chilling the mix water is advisable during hot weather. A pre-measured retarder is also available from Butterfield Color for use with T1000™ Fine Overlay. Duration of retardation will vary with slab and ambient temperatures. Determine the duration prior to the start of the installation.

Mix and install when ambient temperatures are between 45°-85° F (7°-30° C). Use 4.4 quarts (141 ounces) (4.16 L) of potable water per 55-pound (25kg) bag of

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Butterfield Color T1000™ Fine Overlay. Do not mix or modify with any other liquid or chemical. When temperature or humidity changes affect water demand, make small adjustments to the amount of mixing water as needed to achieve proper working consistency. Do not over water. For vertical applications, slightly less water should be used so that T1000™ Fine Overlay does not run or sag before drying. Determine mix ratio before the installation starts. Temperature, humidity, method of application, vertical or horizontal surface, and finished texture will affect the amount of mix water. Measure the water accurately for each batch for the duration of the installation. Color and finished texture will vary if water is not consistently measured for each batch.

Always add water to the 5-gallon (20 L) pail before adding dry materials. Never add water directly to the dry material, as lumping may occur. When coloring is used, slowly add the Uni-Mix® Color Pack while mixing, using a 600 rpm drill and paddle, followed by the Butterfield Color T1000™ Fine Overlay. Do not introduce air bubbles into mixture by excessive high speed mixing.

Continue to mix for a minimum of 3 minutes until a smooth, uniform, lump-free, and a streak-free color has been achieved. Utilize a drill and mixing paddle that are capable of mixing a mortar like material. Do not mix by hand. If the mixture loses its plasticity, do not retemper with water or add previously mixed material to new batches. For larger installations, a paddle mortar mixer can be used. Do not use a concrete mixer. Do not mix more material than can be correctly applied within 20 - 30 minutes at 70° F (21° C). Keep mixing pail free of dried build up. Change or clean mixing pail frequently to avoid pouring hardened lumps onto the substrate or into the hopper gun reservoir.

9. Installation: Mark the location of all working joints in the concrete substrate in order to saw cut joints into the overlay exactly over those existing joints. The overlay joints must be full depth and as wide as the existing substrate joints. Existing substrate joints should be filled with T1000™ Fine Overlay and achieve initial set before applying the overlay. This will prevent the existing joints from creating a shadow in the cured material. This same technique may be used with non-moving random cracks.

All repair and patching compounds must be fully cured before applying T1000™ Fine Overlay and, if used, T1000™ Concrete Primer. Install freshly mixed T1000™ Fine Overlay with a hopper gun or by trowel over a properly prepared concrete substrate. When used, allow T1000™ Concrete

Primer to dry tack free before installing T1000™ Fine Overlay. Maximum applied thickness is 3/16" (4.5mm) in a single application. For thicker applications, allow material to dry for 3-4 hours after placement at 70° F (21° C), and then apply a second layer. Place additional layers in the same manner, before the underlying layer dries completely, for the best adhesion.

During hot, windy, or low humidity conditions, and when no primer will be used, the concrete surface should be moistened with clean water. Up to 24 hours before the start of the installation, wet the concrete sufficiently and allow it to become saturated surface dry (SSD) before applying T1000™ Fine Overlay. This process will cool the substrate temperature and minimize excessive moisture loss from the overlay, which would affect the placement and the durability of the overlay. Do not apply water to the concrete surface before or after the use of a primer. Do not apply water until patching and repair compounds have cured completely. Do not apply T1000™ Fine Overlay over standing or visible moisture on the slab surface, low spots or existing joints or cracks.

Additionally, during hot and windy weather, an evaporation retardant may be applied to the T1000™ Fine Overlay surface to reduce moisture loss, which would cause shrinkage cracking and make the surface difficult to finish. The evaporation retardant can be directly sprayed onto the overlay. Read the manufacturer's instructions thoroughly before using this product. Always maintain a wet edge during application. Terminate pours at existing joint lines, walls or other fixed objects. If a pour is terminated in the center of the floor or at a doorway between rooms for example, delineate the stopping point with a taped line. Only use blue painter's tape. Pour and distribute T1000™ Fine Overlay, just overlapping the tape, but not completely covering the tape. Remove tape as soon as the overlay has achieved initial set and before it has dried. This will leave a straight cold joint for the start of the next pour.

9.1. TROWEL APPLICATION: Once material is thoroughly mixed, immediately pour T1000™ Fine Overlay from the mixing pail onto the concrete surface. A pool trowel or fresno may be used to distribute and finish the product. Similarly, a squeegee can be used to distribute the overlay before finishing with a pool trowel. Keep tools free of build up by cleaning frequently with water before the T1000™ Fine Overlay dries completely. Apply material at a consistent thickness to minimize random shrinkage cracking.

Do not overwork the surface or attempt to

eliminate all trowel marks. If trowel marks are a concern, then utilize a broom, sponge float or swirl finishes hiding trowel lines and creating slip resistance. As the surface starts to dry, it will become tacky and trowelling is not advisable. Wiping the trowel blade with the evaporation retardant may eliminate tool drag. If the surface finish of the overlay is not satisfactory, scrape and remove the problem area before it starts to dry and then reapply the overlay. Note: the reapplied material may be visually different from the surrounding surfaces.

9.2. HOPPER GUN APPLICATION: This method of application is suitable for horizontal and vertical surfaces. It is particularly useful when a splatter with a knock down finish is desired for slip resistance on pool decks or similar environments.

The amount of mixing water used should be adjusted for vertical applications, in order to create the desired consistency for finishing, and to allow for application through a hopper gun.

The hopper gun should be in good working order and periodically cleaned with water during the application. Do not allow material to set up in the hopper gun. Orifice size may vary depending on mix consistency. A large orifice is used for splatter or rough finishes and when the overlay material is mixed to a thick consistency. A smaller orifice is used for smoother finishes, and when the overlay material is mixed to a wetter consistency. Determine mix consistency and orifice size before the installation starts.

Deliver the overlay product with a maximum of pressure of 30 psi (0.21 Mpa). Higher pressure / air volume could prematurely dry the overlay causing a rough appearance and a loss of adhesion. Use a compressor that delivers oil-free air. Attach a ball valve at the hopper gun so that air pressure can be easily and quickly adjusted at the point of application.

Do not exceed the maximum allowable thickness for T1000™ Fine Overlay. Achieve thicker installations with multiple applications. Immediately after application, T1000™ Fine Overlay can receive a knock down finish or left with the coarse texture created by the hopper gun delivery. Finishing time will vary with temperature, wind, humidity, use of a primer or an evaporation retarder. Do not mix or apply more material than can be handled effectively for the installation.

9.3. STENCIL APPLICATION: A variety of stone and brick patterns can be created on existing concrete surfaces by using Butterfield Color® Stencils and T1000™ Fine Overlay. The stencil and overlay

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system can be used on horizontal and vertical surfaces. Adhesive backed and non-adhesive backed stencil are available. Butterfield Color® Stencils and T1000™ Fine Overlay can be used directly over clean and sound concrete. If a mortar joint color other than the existing concrete color is desired, a base coat of T1000™ Fine Overlay mixed with a color pack can be applied before placing the stencil.

A base coat of T1000™ Fine Overlay can be applied by trowel or with a hopper gun. The base coat should be applied as thin as possible in order to achieve consistent coverage over the substrate. Once applied, allow the base coat to cure sufficiently so that it may be walked on without marring when placing the stencil. Cure time is 4-8 hours, depending on temperature, wind, humidity, and applied thickness

After the stencil is placed, a top coat of T1000™ Fine Overlay is applied with a hopper gun. Finish and texture the overlay immediately after application. Remove the stencil after overlay has reached initial set and so that T1000™ Fine Overlay will not be marred or damaged. The timing for stencil removal will vary with temperature, wind, humidity and applied thickness. Never leave stencil on the surface overnight.

10. Curing: T1000™ Fine Overlay is self-curing. However, during hot weather or windy conditions, fog misting, curing paper (conforming to ASTM C 171), or polyethylene sheets may be used to minimize plastic shrinkage cracking. The method of curing may affect the final color of T1000™ Fine Overlay. Verify curing method and timing with a mock up. Once the curing method has been determined, utilize consistently throughout the installation. Curing time varies with ambient and substrate temperatures and humidity. The surface can be walked on gently approximately 4 hours after placement at 70° F (21° C). Cure for a minimum of 72 hours before opening the surface to automobile traffic. A full 28-day cure is required before heavy traffic or exposure to freeze/thaw cycling.

Saw cutting of control joints directly over the existing control joints in the concrete substrate should be completed within 12 hours after installation, once the surface has gained adequate strength so as not be damaged by the saw cutting process. Cool ambient and surface temperatures may delay sawing.

11. Chemical Staining: For natural appearing color variations, T1000™ Fine Overlay can be colored with Perma-Cast® Sierra Stain™. The overlaid surface should be fully cured, clean, and dry before applying Perma-Cast® Sierra Stain™. Do not utilize aggressive cleaning methods until T1000™ Fine Overlay is thoroughly cured. Read the Perma-Cast® Sierra Stain™ Technical Data Sheet before installing product.

12. Sealing: Clear Guard™ Cure and Seal should be applied after the surface has cured for a minimum of 72 hours at 70° F (21° C). Application of a solvent-based sealer prior to 72 hours may weaken the surface of an overlay. Sealed surfaces may become slippery when wet. Sealed surfaces will require maintenance. Read the Clear Guard™ Cure and Seal Technical Data Sheet before installing product.

13. Repair: Damage to the overlaid surface should be repaired with T1000™ Fine Overlay. Once the cause of the damage has been determined and corrected, the deteriorated area should be cut and chipped to the minimum applied depth of the product, 1/16 inch (1.5 mm). If damage to the underlying concrete exceeds the maximum allowable thickness of T1000™ Fine Overlay, 3/16 inch (4.5 mm), use a suitable patching compound to repair the concrete, prior to the application of T1000™ Fine Overlay or apply T1000™ Fine Overlay in multiple applications, not exceeding 3/16 inch (4.5 mm) in a single application.

The repair cavity should be chipped to a uniform depth to minimize random shrinkage cracking in the repair materials. The perimeter of the repair cavity should be

saw cut or chipped out to prevent feather edging of the patching compound. All dust and contamination should be removed before application of the patching compound or T1000™ Fine Overlay. The repaired area may appear differently than adjacent surfaces. Repair materials and methods should be evaluated and confirmed with a repair mock up.

14. Quality Control: Cast a job site sample at least 21 days prior to the installation for approval of color and finish. Utilize all materials, tools, and techniques from the actual job in the mock-up. Consistent batching, pouring, finishing, curing, sealing, and preparation techniques, will ensure the uniformity of architectural concrete. Verify adequate wet and dry slip resistance. Discuss maintenance requirements. Site visits by Butterfield Color, Inc. personnel are for making technical recommendations only and not for supervising or providing quality control. Maintenance requirements should also be discussed.

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Suggested Short Form Specification for Butterfield Color T1000™ Fine Overlay – Repair:

Prepare overlay surfaces [Optional: and prime with Butterfield Color T1000™ Primer] according to manufacturer's instructions. Mix Butterfield Color T1000™ Fine Overlay according to manufacturer's instructions and apply by trowel or squeegee to a uniform thickness of 1/16 to 3/16 inch. Clean tools frequently to avoid build up of overlay materials. Seal concrete with 2 coats Butterfield Color Clear Guard™ Cure and Seal with slip-resistive additive according to manufacturer's instructions.

Suggested Short Form Specification for Butterfield Color T1000™ Fine Overlay – Decorative:

Prepare overlay surfaces [Optional: and prime with Butterfield Color T1000™ Primer] according to manufacturer's instructions. Mix Butterfield Color T1000™ Fine Overlay with Uni-Mix® Color Pack [] according to manufacturer's instructions and apply by trowel or squeegee to a uniform thickness of 1/16 to 3/16 inch. Clean tools frequently to avoid build up of overlay materials. [Optional: Apply Butterfield Color Perma-Cast® Sierra Stain™ using [] color according to manufacturer's instructions.] [Optional: Apply Butterfield Color Stencils according to manufacturer's instructions and spray-apply overlay cementitious topping by hopper gun according to manufacturer's instructions.] Seal concrete with 2 coats Butterfield Color Clear Guard™ Cure and Seal [Optional: with slip-resistive additive] according to manufacturer's instructions.